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LADAS & PARRY
26 WEST 61ST STREET
NEW YORK, NY 10023

EXAMINER	
BRUSCA, JOHN S	
ART UNIT	PAPER NUMBER
1631	
MAIL DATE	DELIVERY MODE
01/24/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/849,491	BHARADWAJ ET AL.	
	Examiner	Art Unit	
	John S. Brusca	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 6-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action contains a new grounds of rejection not necessitated by amendment and is consequently a non-final Office action.

Election/Restrictions

2. Upon further consideration, examination of withdrawn Group 2 (claim 12) does not require a search burden, and Group 2 consisting currently of claim 12 is **rejoined**.

Claim Objections

3. The objection to claims 1, and 7-10 in the Office action mailed 02 May 2007 is withdrawn in view of the amendment filed 05 November 2007.

Claim Rejections - 35 USC § 101

4. The rejection of claims 1-2 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter due to not being drawn to one of the four statutory categories of invention is withdrawn in view of the amendment filed 05 November 2007.

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-4, and 6-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 3, 4, 6-11, 15, and 16 are drawn to a process. A statutory process must include a step of a physical transformation, or produce a useful, concrete, and tangible result (State Street

Bank & Trust Co. v. Signature Financial Group Inc. CAFC 47 USPQ2d 1596 (1998), AT&T Corp. v. Excel Communications Inc. (CAFC 50 USPQ2d 1447 (1999)). The instant claims do not explicitly result in a physical transformation, thus the Examiner must determine if the instant claims include a useful, concrete, and tangible result.

As noted in State Street Bank & Trust Co. v. Signature Financial Group Inc. CAFC 47 USPQ2d 1596 (1998) below, the statutory category of the claimed subject matter is not relevant to a determination of whether the claimed subject matter produces a useful, concrete, and tangible result:

The question of whether a claim encompasses statutory subject matter should not focus on *which* of the four categories of subject matter a claim is directed to 9 -- process, machine, manufacture, or composition of matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice. *See In re Warmerdam* , 33 F.3d 1354, 1359, 31 USPQ2d 1754, 1757-58 (Fed. Cir. 1994). For purpose of our analysis, as noted above, claim 1 is directed to a machine programmed with the Hub and Spoke software and admittedly produces a "useful, concrete, and tangible result." *Alappat* , 33 F.3d at 1544, 31 USPQ2d at 1557. This renders it statutory subject matter, even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss.

In determining if the claimed subject matter produces a useful, concrete, and tangible result, the Examiner must determine each standard individually. For a claim to be "useful" the claim must produce a result that is specific and substantial. For a claim to be "concrete" the process must have a result that is reproducible. For a claim to be "tangible" the process must produce a real world result . Furthermore, the claim must be limited only to statutory embodiments.

Claims 1-4 and 6-16 do not require production of a tangible result in a form that is useful to the user of the process or apparatus. The claims do not explicitly produce, or cause to be produced, an output in a form that can be interpreted by a user. A tangible result requires that the claim must set forth a practical application to produce a real-world result. This rejection could be overcome by amendment of the claims to recite that a result of the process is outputted to a display, or to a user, or in a graphical format, or in a user readable format, or by including a result that is a physical transformation. The applicants are cautioned against introduction of new matter in an amendment.

In addition, the program of claim 12 has an embodiment that is a program per se, and is not limited to functional descriptive material because it is not limited to a physical embodiment of a machine such as a memory disk. In addition, claim 12 is not limited to **computer executable** instructions, but apparently could merely be suggestions or advice on how to perform a method.

6. Applicant's arguments filed 05 November 2007 have been fully considered but they are not persuasive. Although the Office suggested several remedies in the previous Office action, the instant Office action has a revised set of suggested remedies that are currently deemed to safely place claimed subject matter in compliance with 35 U.S.C. 101 regarding statutory subject matter. The applicants are advised to carefully review the suggested remedies. The Office regrets any inconvenience the change in suggested remedies may cause the applicants. It is further noted that the amendment filed 05 November 2007 does not appear to include amendments that place the claimed subject matter clearly within the bounds of 35 U.S.C. 101 regarding a tangible result,

or a result that is a physical transformation. A limitation of storing a result in memory is not considered to be a tangible result because it does not require generation of a result that can be interpreted by a user. Either claiming a process (or a machine that executes the process) that clearly results in a physical transformation, or produces a useful, concrete, and tangible result will satisfy the statutory subject matter requirements of 35 U.S.C. 101. The applicants are further advised to consider the rejection under 35 U.S.C. 112, second paragraph regarding indefiniteness as to whether nucleic acids are made or modified by the claimed subject matter. Claims which require making or modifying nucleic acids as a result would produce a physical transformation and therefore be statutory subject matter.

Claim Rejections - 35 USC § 112

7. The rejection of claims 1-11 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention in the Office action mailed 02 May 2007 is withdrawn in view of the amendment filed 05 November 2007

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-4, and 6-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-4 and 6-16 are indefinite because it is not clear if the computing device and program of claims 1, 2, and 12-14 comprise a polynucleotide or consist solely of an electronic computer or instructions for performing a method on an electronic computer, nor is it clear if the process of claims 3, 4, 6-11, 15, and 16 is performed by making or modifying a polynucleotide or by manipulation of abstract data.

Claims 7-9, 11, 12, and 14-16 are indefinite for recitation of the term "cell" because it is not clear if the cell is a biological entity or a mathematical concept.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butland.

The claim is drawn to either a process, or apparatus that requires bases of DNA to be assigned numerical values based on the type of base and the position of the base that represent a number encoded in the DNA base sequence. The bases are assigned values of A = 0, T = 1, C = 2, and G = 3.

Butland shows in page 4, paragraph 31 and Table 2, a method of designing a DNA sequence to encrypt a number by use of a quarternary code. Table 2 shows a correspondence of arbitrary sequences and the numerals 0-9. The sequences of bases in table 2 correspond to numbers 1-9 and therefore the positions of the bases in the base sequence contains information. Table 2 shows single bases are assigned code values of A = space, T = C, C = A, and G = B. Butland does not show in Table 2 assigning values to the bases of A = 0, T = 1, C = 2, and G = 3.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the values of the single bases A, T, C, and G to be A = 0, T = 1, C = 2, and G = 3 because the choice of corresponding alphanumeric values for base sequences in Table 2 is arbitrary and could be modified without affecting the ability of a desired number to be encoded in DNA.

13. Applicant's arguments filed 05 November 2007 have been fully considered but they are not persuasive. The applicants state that the code of Butland does not comprise positional

information, however table 2 makes clear that the sequence of bases determines what is encoded and therefore the position of each base in each sequence shown in table 2 has positional information.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John S. Brusca whose telephone number is 571 272-0714. The examiner can normally be reached on M-F 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie A. Moran can be reached on 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John S. Brusca/

Primary Examiner

Art Unit 1631